FIG. 1

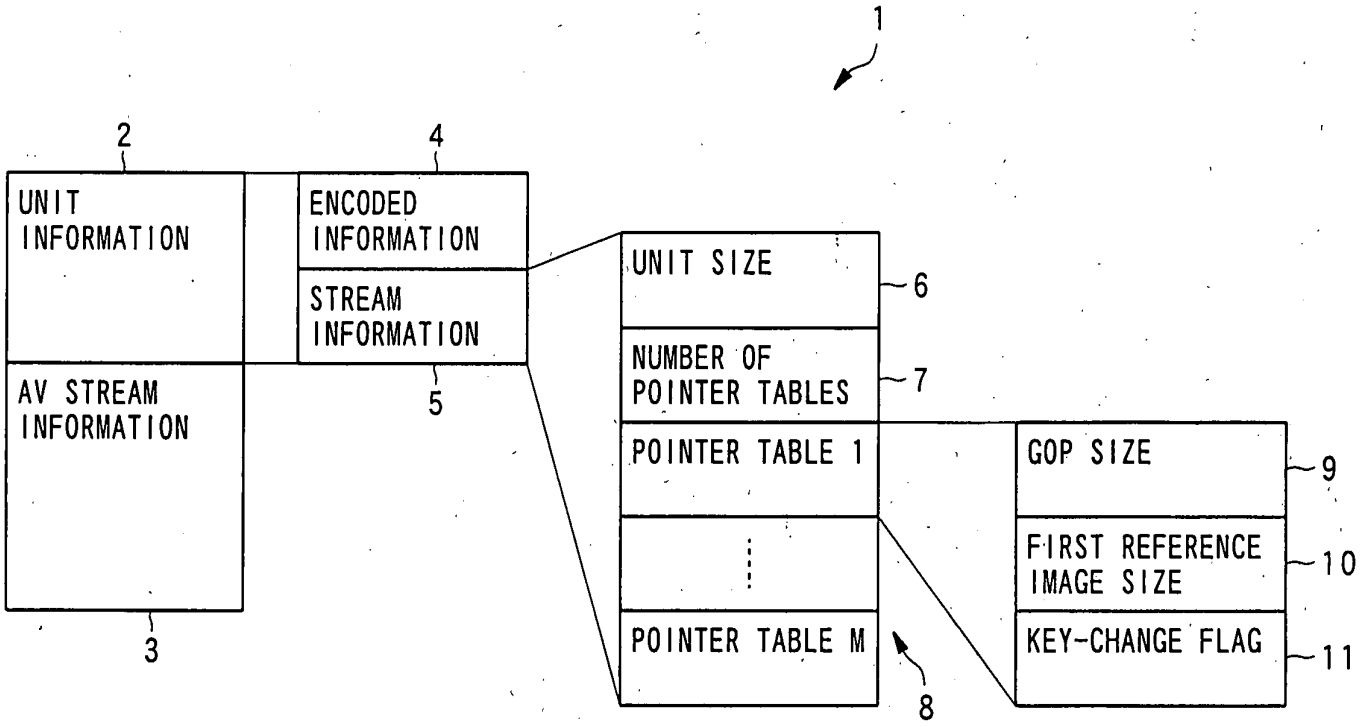
1
2
4
UNIT INFORMATION
ENCODED INFORMATION
STREAM INFORMATION
AV STREAM INFORMATION
3
5
UNIT SIZE
6
NUMBER OF POINTER TABLES
7
POINTER TABLE 1
POINTER TABLE M
8
GOP SIZE
9
FIRST REFERENCE IMAGE SIZE
10
KEY-CHANGE FLAG
11

FIG. 2

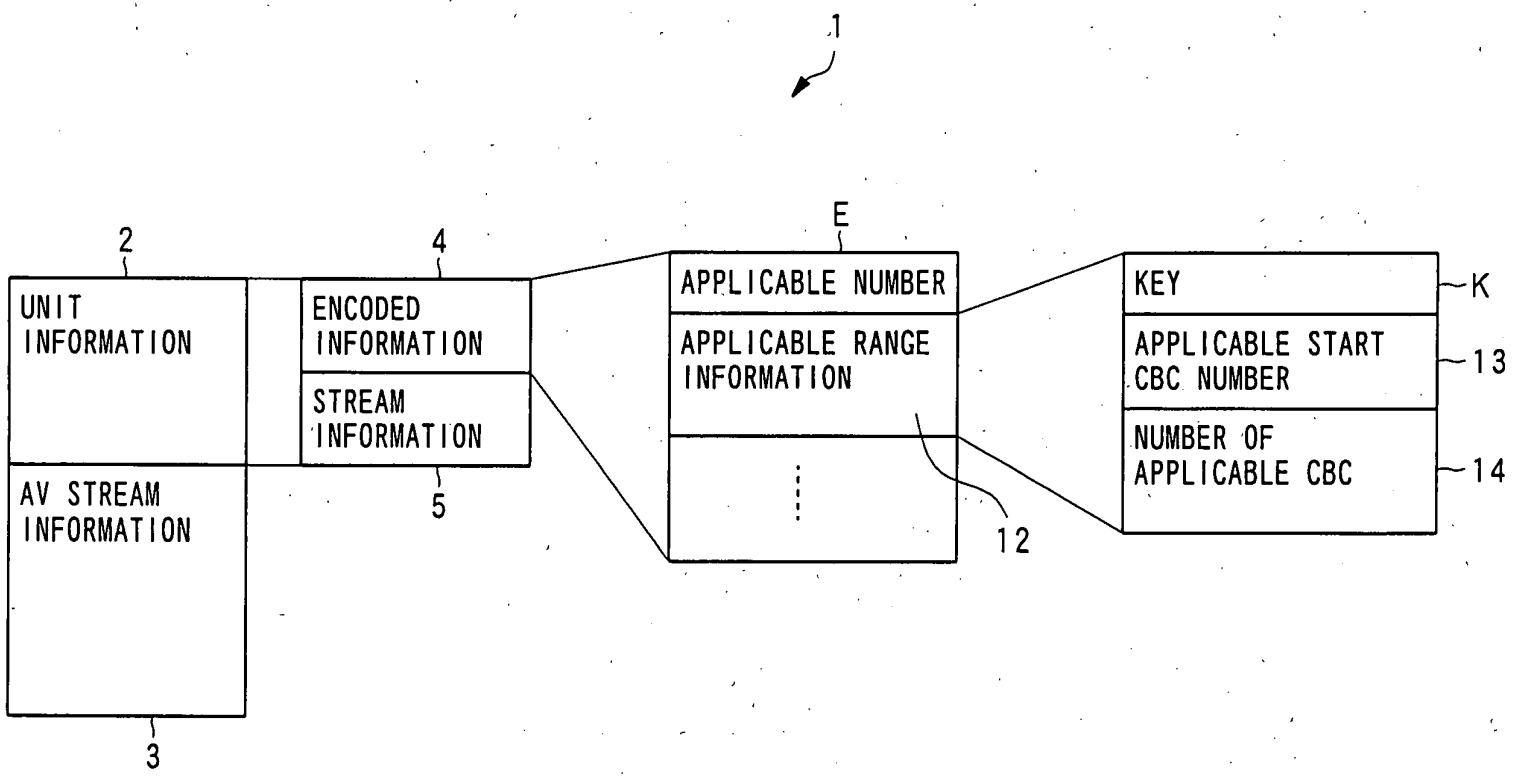
1
2
UNIT INFORMATION
AV STREAM INFORMATION
3
4
ENCODED INFORMATION
STREAM INFORMATION
5
E
APPLICABLE NUMBER
APPLICABLE RANGE INFORMATION
12
KEY
K
APPLICABLE START CBC NUMBER
13
NUMBER OF APPLICABLE CBC
14

FIG. 3

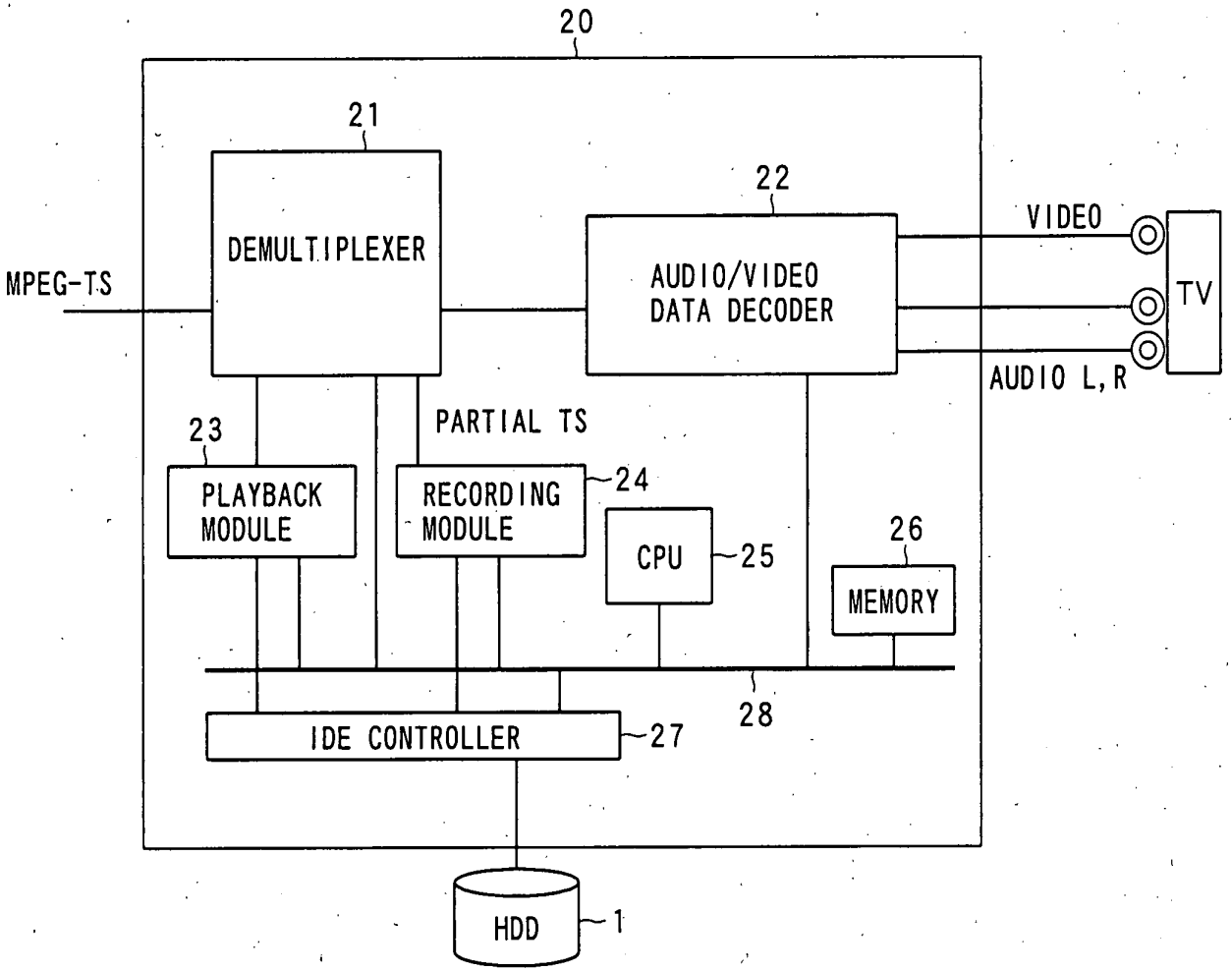
20
21
DEMULTIPLEXER
22
AUDIO/VIDEO
DATA DECODER
VIDEO
TV
MPEG-TS
AUDIO L, R
23
PARTIAL TS
PLAYBACK
MODULE
RECORDING
MODULE
24
CPU
25
26
MEMORY
28
IDE CONTROLLER
27
HDD
1

FIG. 4

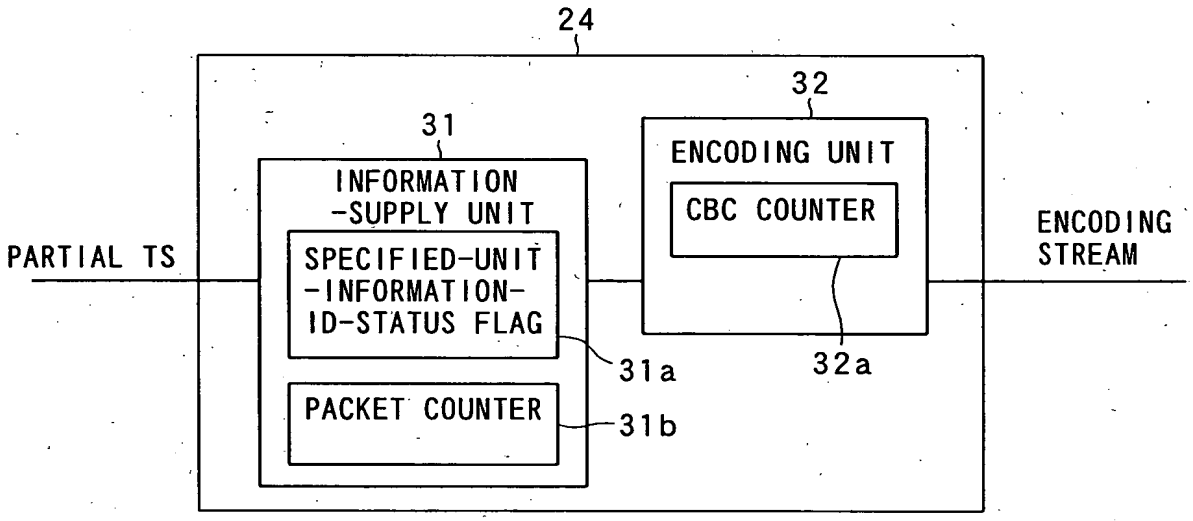
24
32
31
ENCODING UNIT
INFORMATION
-SUPPLY UNIT
CBC COUNTER
PARTIAL TS
SPECIFIED-UNIT
-INFORMATION-
ID-STATUS FLAG
ENCODING
STREAM
31a
32a
PACKET COUNTER
31b

FIG. 5

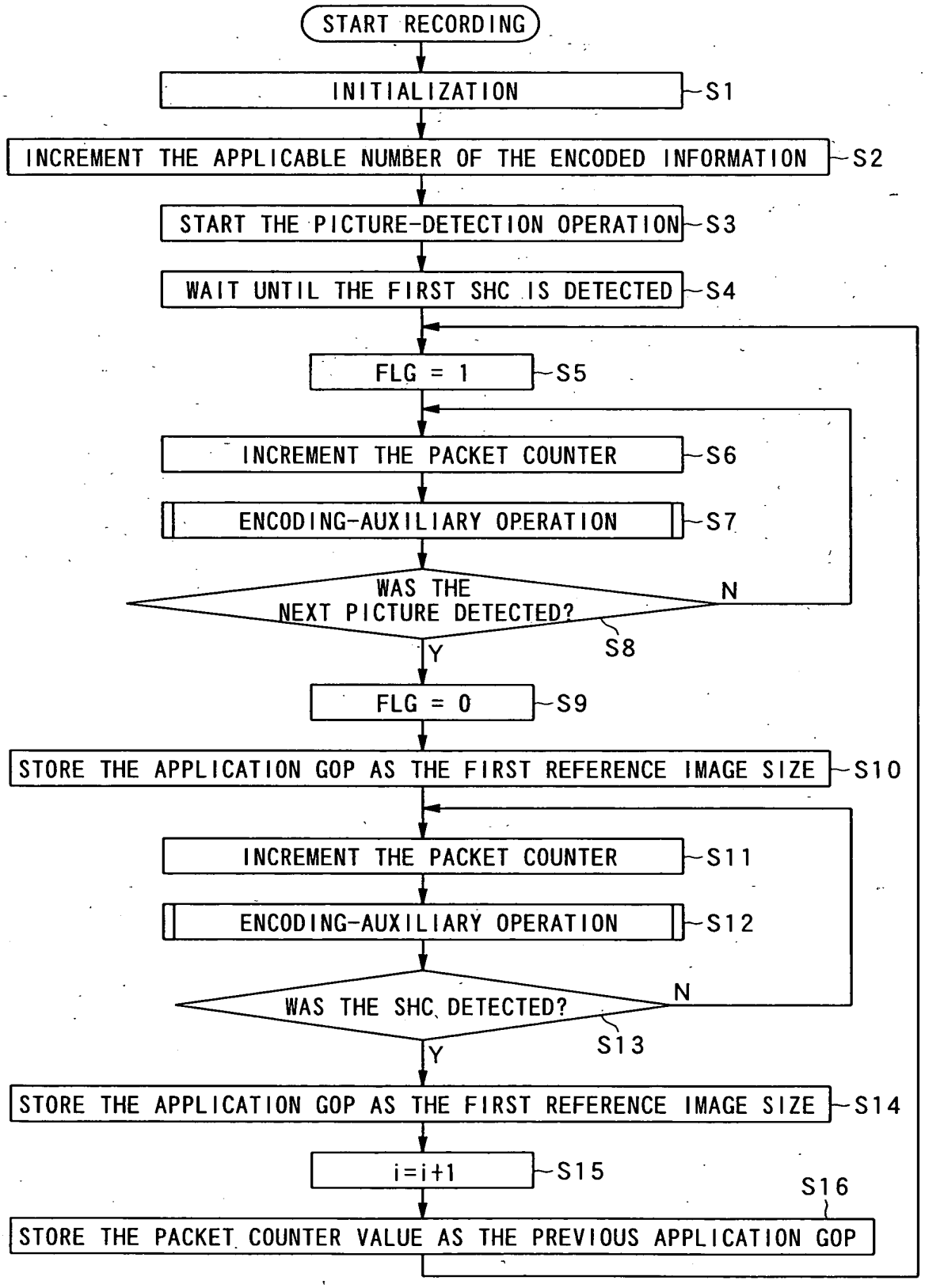
START RECORDING
INITIALIZATION
S1
INCREMENT THE APPLICABLE NUMBER OF THE ENCODED INFORMATION
S2
START THE PICTURE-DETECTION OPERATION
S3
WAIT UNTIL THE FIRST SHC IS DETECTED
S4
FLG = 1
S5
INCREMENT THE PACKET COUNTER
S6
ENCODING-AUXILIARY OPERATION
S7
WAS THE NEXT PICTURE DETECTED?
S8
N
Y
FLG = 0
S9
STORE THE APPLICATION GOP AS THE FIRST REFERENCE IMAGE SIZE
S10
INCREMENT THE PACKET COUNTER
S11
ENCODING-AUXILIARY OPERATION
S12
WAS THE SHC DETECTED?
S13
N
Y
STORE THE APPLICATION GOP AS THE FIRST REFERENCE IMAGE SIZE
S14
i=i+1
S15
S16
STORE THE PACKET COUNTER VALUE AS THE PREVIOUS APPLICATION GOP

FIG. 6

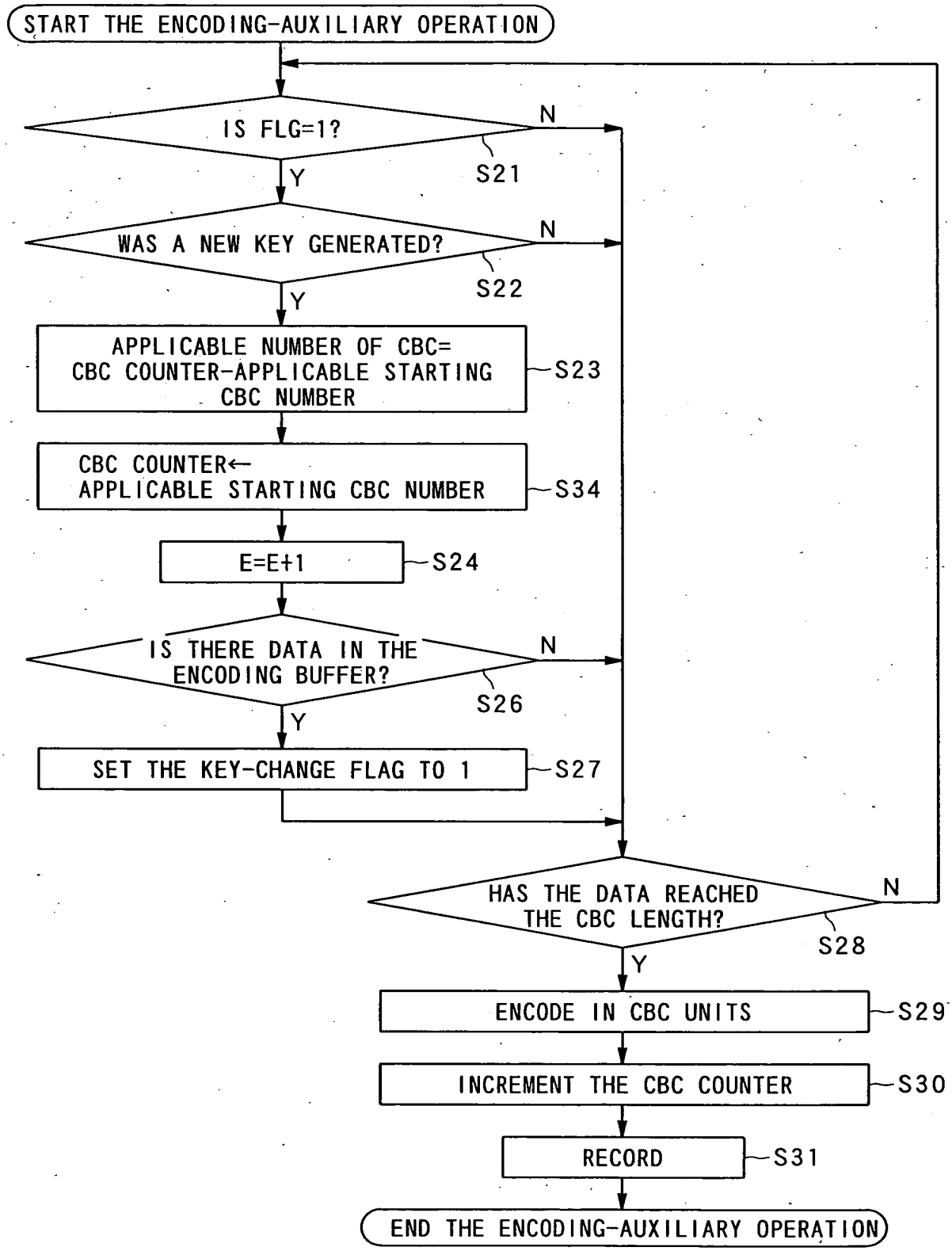
START THE ENCODING-AUXILIARY OPERATION
IS FLG=1?
N
S21
Y
WAS A NEW KEY GENERATED?
N
S22
Y
APPLICABLE NUMBER OF CBC= CBC COUNTER-APPLICABLE STARTING CBC NUMBER
S23
CBC COUNTER← APPLICABLE STARTING CBC NUMBER
S34
E=E+1
S24
IS THERE DATA IN THE ENCODING BUFFER?
N
S26
Y
SET THE KEY-CHANGE FLAG TO 1
S27
HAS THE DATA REACHED THE CBC LENGTH?
N
S28
Y
ENCODE IN CBC UNITS
S29
INCREMENT THE CBC COUNTER
S30
RECORD
S31
END THE ENCODING-AUXILIARY OPERATION

FIG. 7

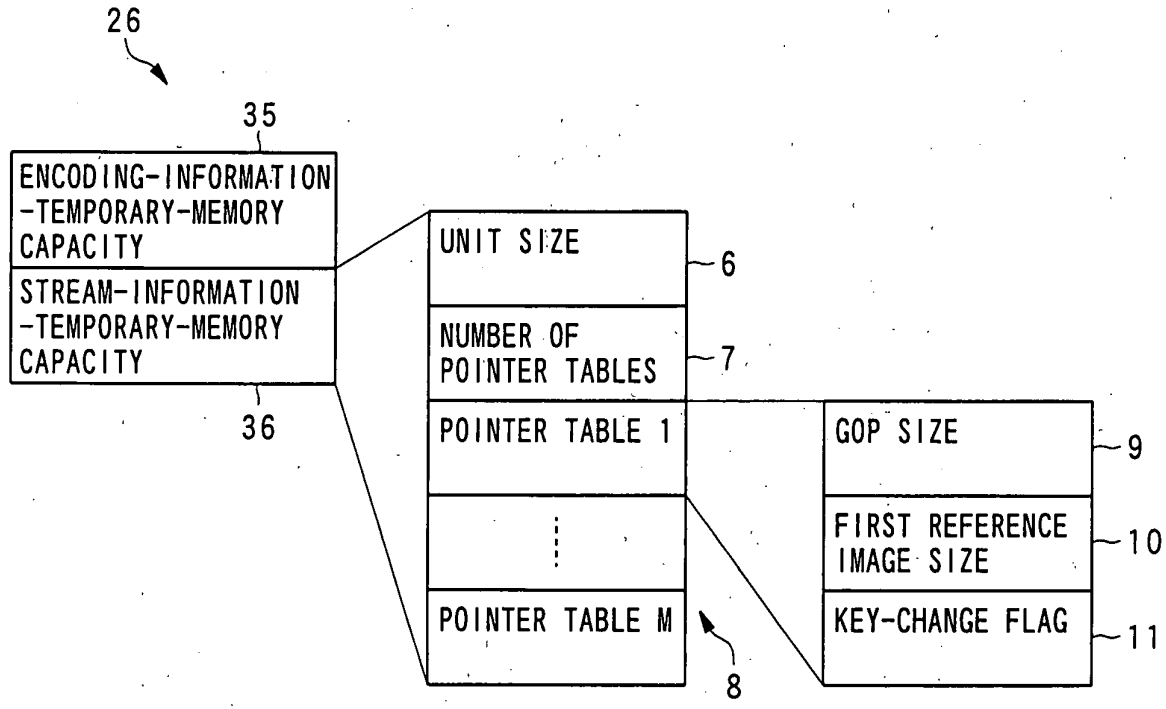
26
35
ENCODING-INFORMATION -TEMPORARY-MEMORY CAPACITY
STREAM-INFORMATION -TEMPORARY-MEMORY CAPACITY
36
UNIT SIZE
6
NUMBER OF POINTER TABLES
7
POINTER TABLE 1
POINTER TABLE M
8
GOP SIZE
9
FIRST REFERENCE IMAGE SIZE
10
KEY-CHANGE FLAG
11

FIG. 8

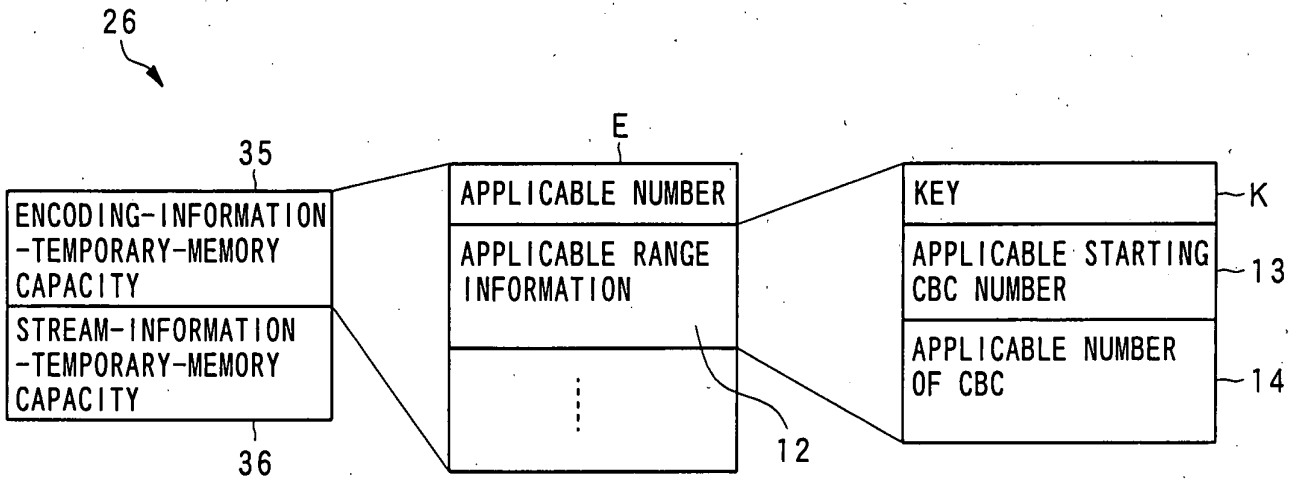
26
35
ENCODING-INFORMATION -TEMPORARY-MEMORY CAPACITY
STREAM-INFORMATION -TEMPORARY-MEMORY CAPACITY
36
E
APPLICABLE NUMBER
APPLICABLE RANGE INFORMATION
12
KEY
K
APPLICABLE STARTING CBC NUMBER
13
APPLICABLE NUMBER OF CBC
14

FIG. 9

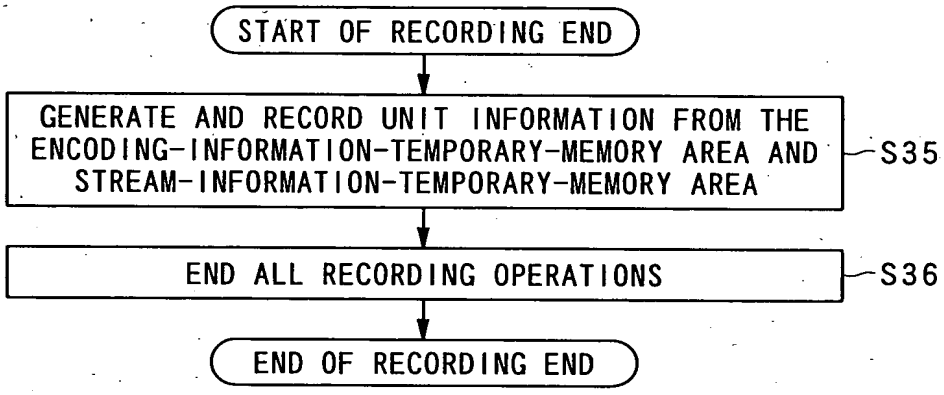
START OF RECORDING END
GENERATE AND RECORD UNIT INFORMATION FROM THE ENCODING-INFORMATION-TEMPORARY-MEMORY AREA AND STREAM-INFORMATION-TEMPORARY-MEMORY AREA
S35
END ALL RECORDING OPERATIONS
S36
END OF RECORDING END

FIG.10

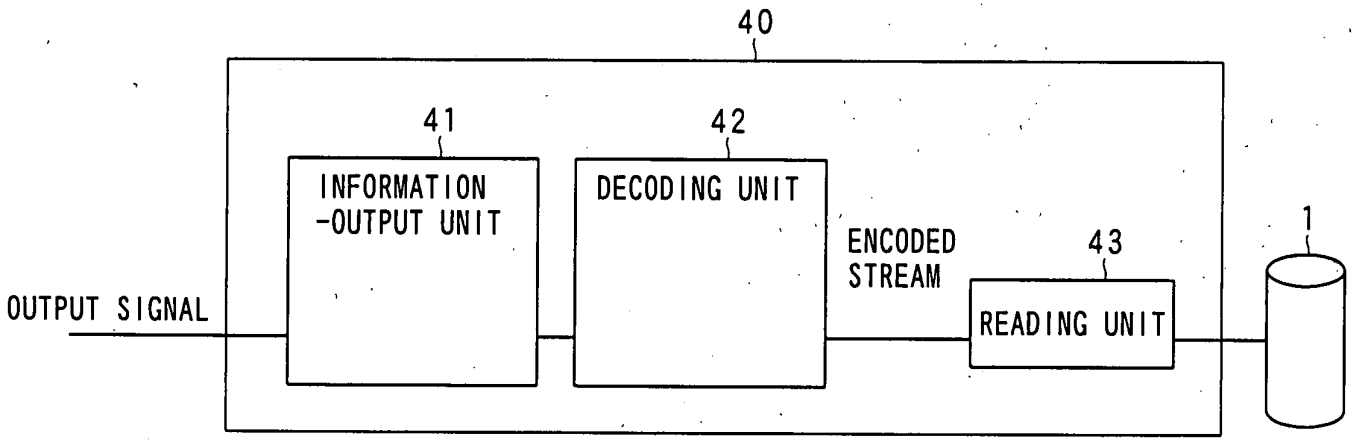
40
41
42
INFORMATION
-OUTPUT UNIT
DECODING UNIT
ENCODED
STREAM
43
READING UNIT
1
OUTPUT SIGNAL

FIG.11

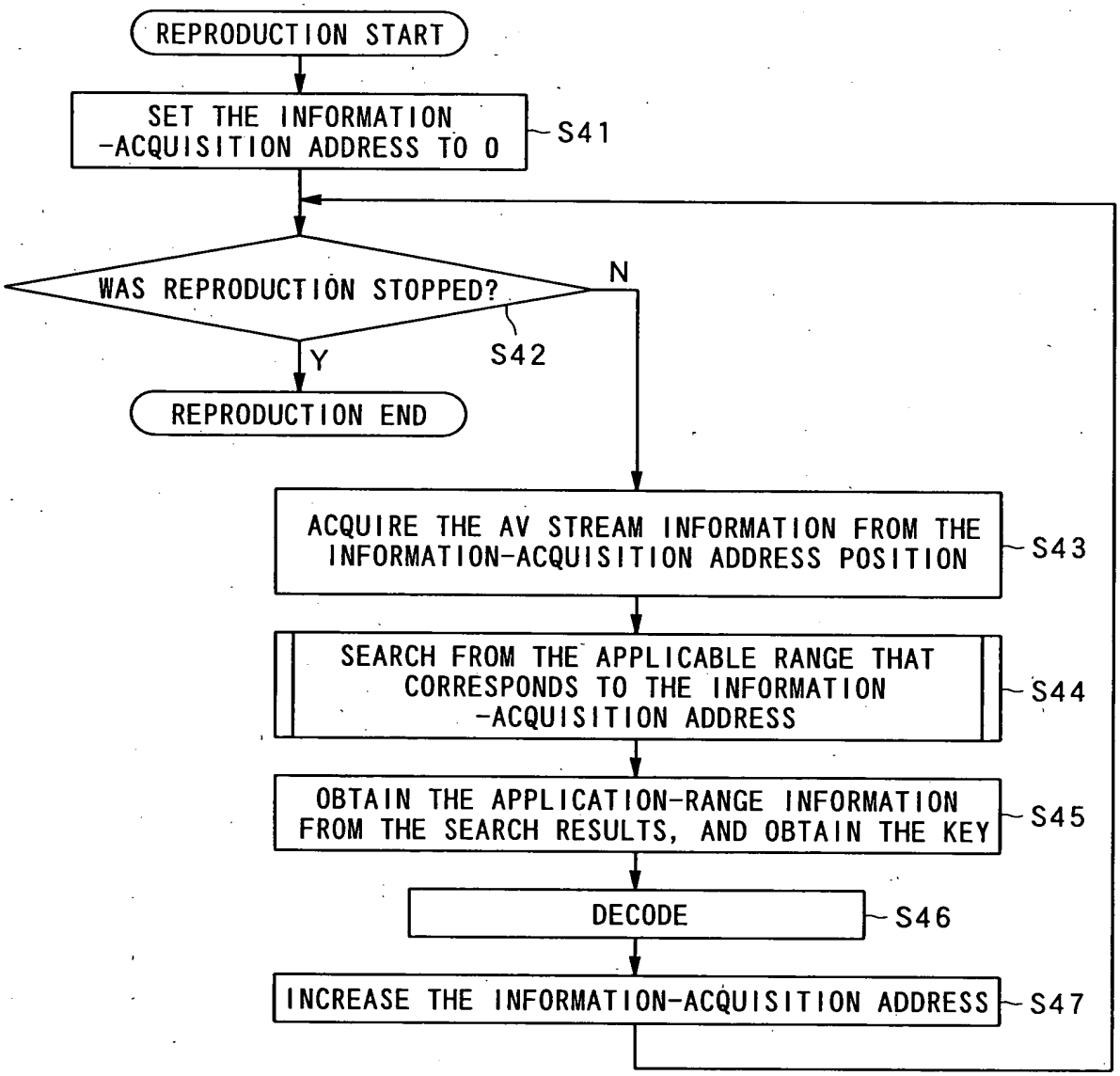
REPRODUCTION START
SET THE INFORMATION -ACQUISITION ADDRESS TO 0
S41
WAS REPRODUCTION STOPPED?
N
Y
S42
REPRODUCTION END
ACQUIRE THE AV STREAM INFORMATION FROM THE INFORMATION-ACQUISITION ADDRESS POSITION
S43
SEARCH FROM THE APPLICABLE RANGE THAT CORRESPONDS TO THE INFORMATION -ACQUISITION ADDRESS
S44
OBTAIN THE APPLICATION-RANGE INFORMATION FROM THE SEARCH RESULTS, AND OBTAIN THE KEY
S45
DECODE
S46
INCREASE THE INFORMATION-ACQUISITION ADDRESS
S47

FIG.12

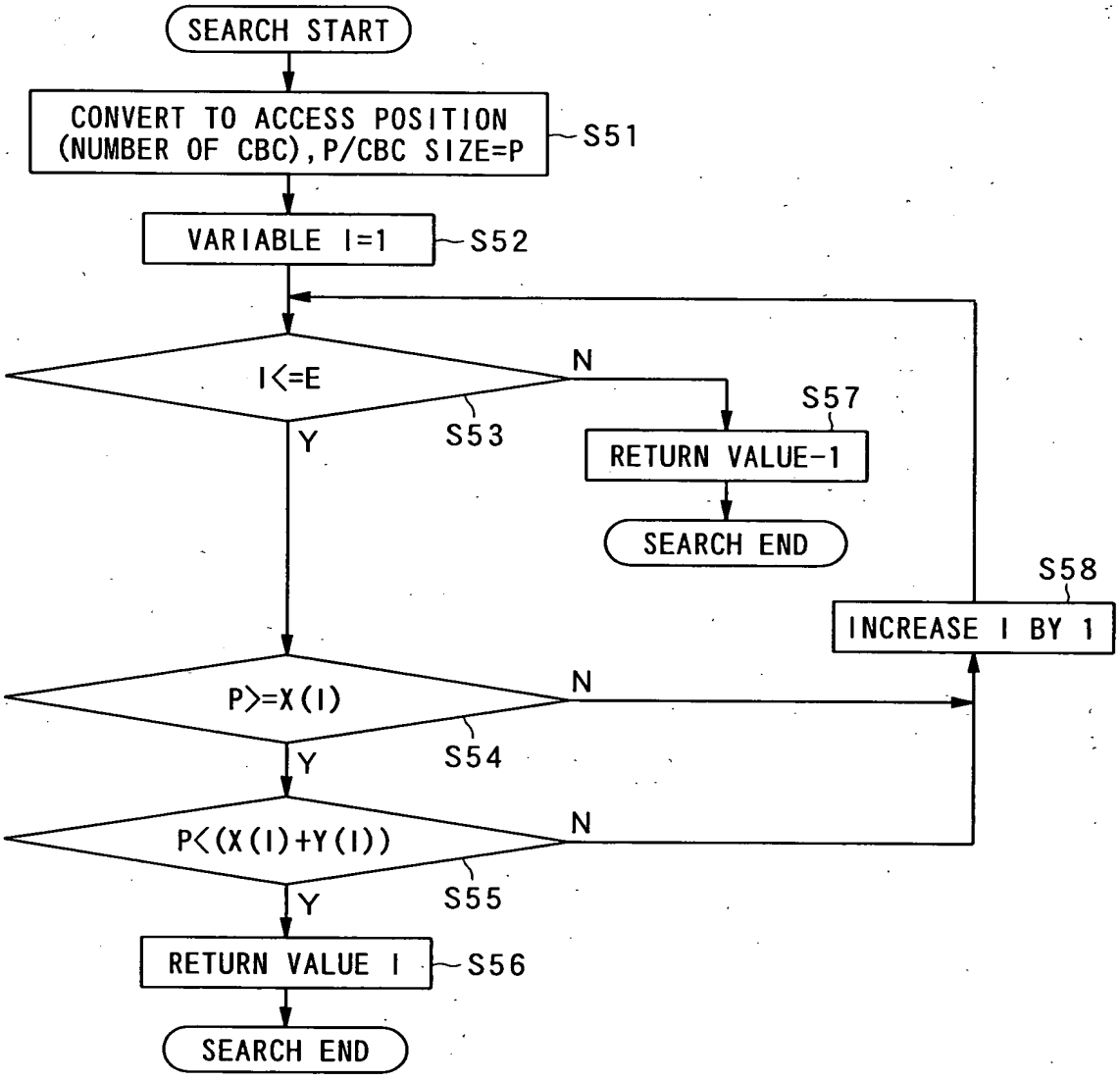
SEARCH START
CONVERT TO ACCESS POSITION (NUMBER OF CBC), P/CBC SIZE=P
S51
VARIABLE I=1
S52
I<=E
S53
N
Y
S57
RETURN VALUE-1
SEARCH END
S58
INCREASE I BY 1
P>=X(I)
S54
N
Y
P<(X(I)+Y(I))
S55
N
Y
RETURN VALUE I
S56
SEARCH END

FIG.13

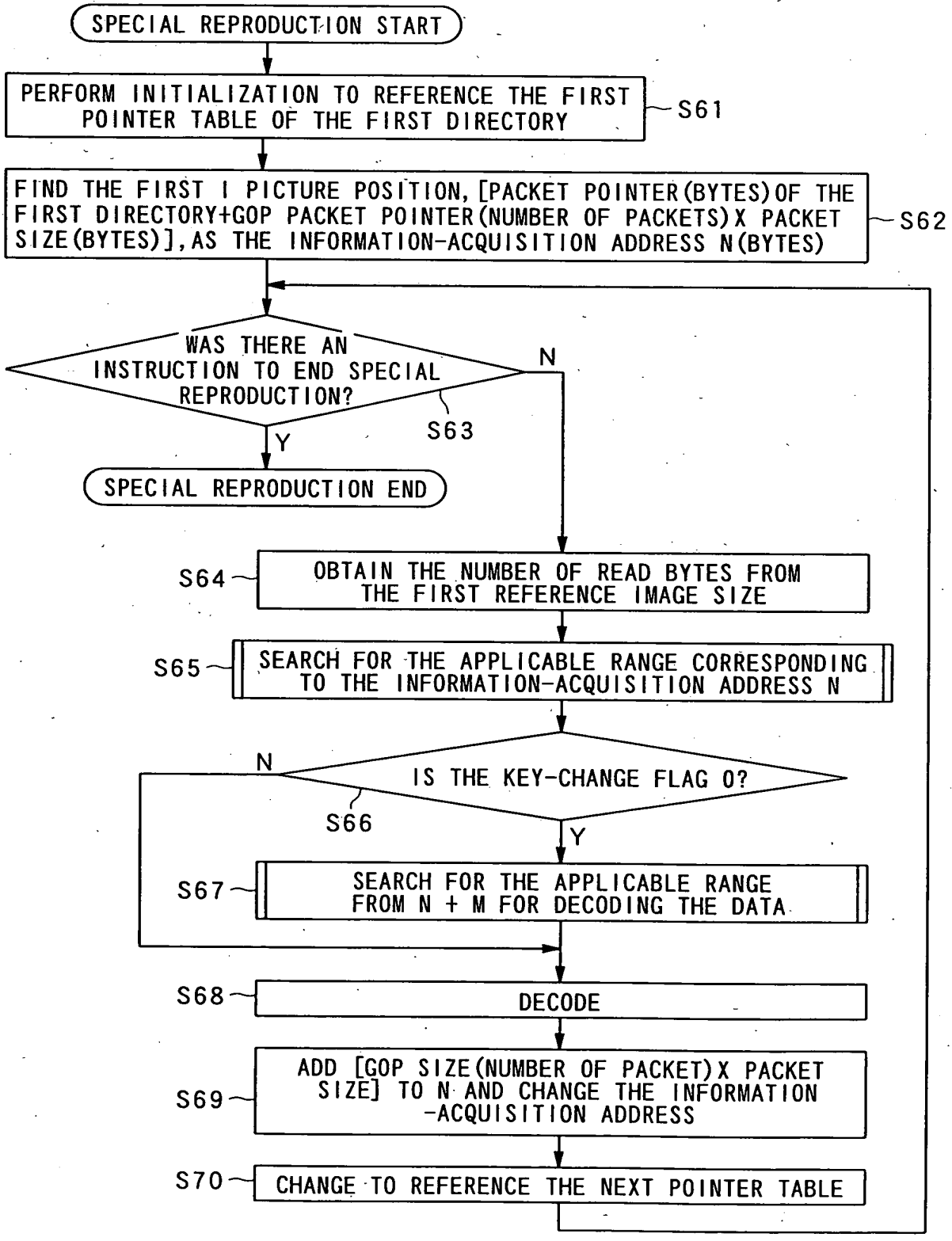
SPECIAL REPRODUCTION START
PERFORM INITIALIZATION TO REFERENCE THE FIRST POINTER TABLE OF THE FIRST DIRECTORY
S61
FIND THE FIRST I PICTURE POSITION, [PACKET POINTER(BYTES) OF THE FIRST DIRECTORY+GOP PACKET POINTER(NUMBER OF PACKETS) X PACKET SIZE(BYTES)], AS THE INFORMATION-ACQUISITION ADDRESS N(BYTES)
S62
WAS THERE AN INSTRUCTION TO END SPECIAL REPRODUCTION?
N
S63
Y
SPECIAL REPRODUCTION END
S64
OBTAIN THE NUMBER OF READ BYTES FROM THE FIRST REFERENCE IMAGE SIZE
S65
SEARCH FOR THE APPLICABLE RANGE CORRESPONDING TO THE INFORMATION-ACQUISITION ADDRESS N
N
IS THE KEY-CHANGE FLAG 0?
S66
Y
S67
SEARCH FOR THE APPLICABLE RANGE FROM N + M FOR DECODING THE DATA
S68
DECODE
S69
ADD [GOP SIZE(NUMBER OF PACKET) X PACKET SIZE] TO N AND CHANGE THE INFORMATION -ACQUISITION ADDRESS
S70
CHANGE TO REFERENCE THE NEXT POINTER TABLE

FIG.14

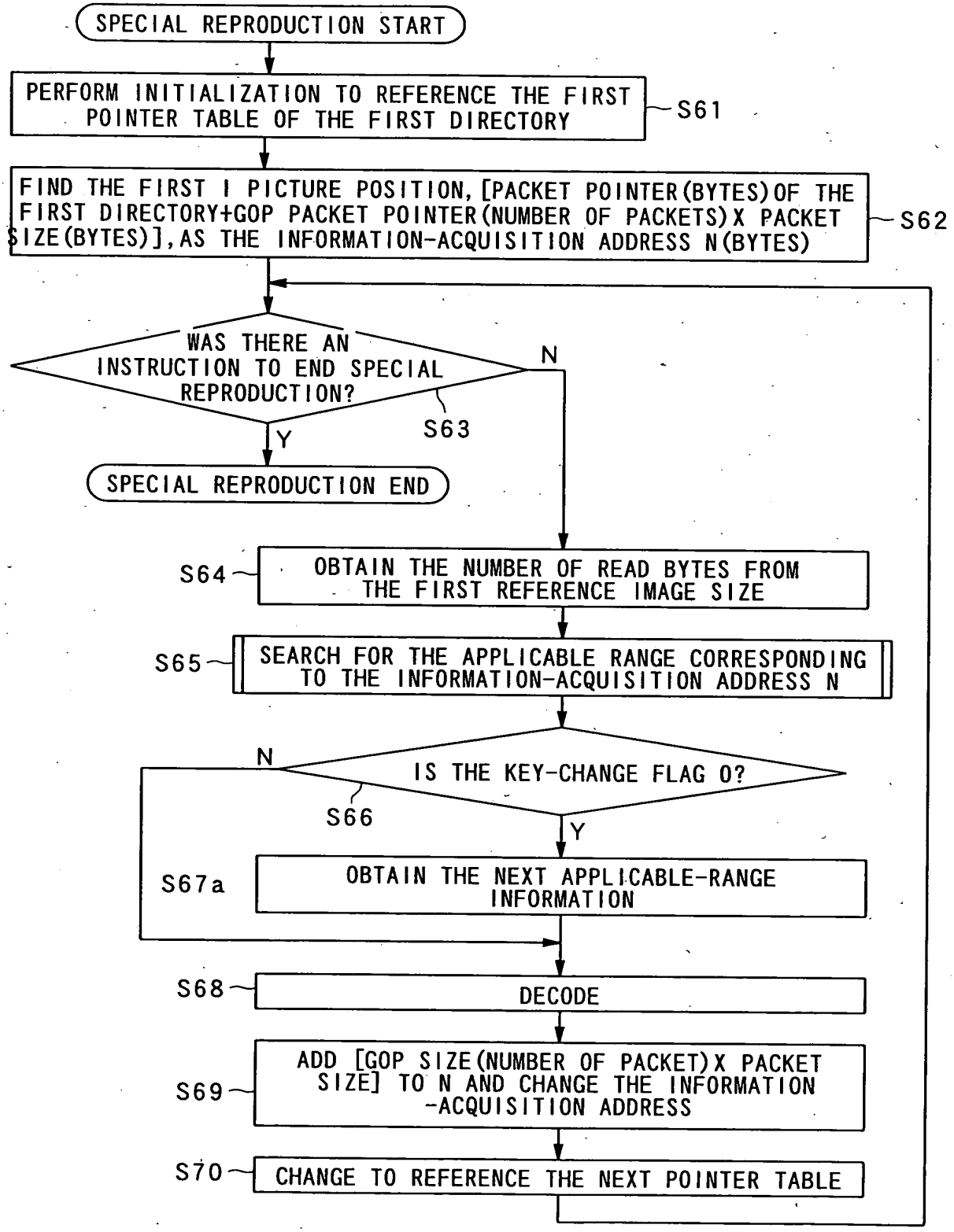
SPECIAL REPRODUCTION START
PERFORM INITIALIZATION TO REFERENCE THE FIRST POINTER TABLE OF THE FIRST DIRECTORY
S61
FIND THE FIRST I PICTURE POSITION, [PACKET POINTER(BYTES) OF THE FIRST DIRECTORY+GOP PACKET POINTER(NUMBER OF PACKETS) X PACKET SIZE(BYTES)], AS THE INFORMATION-ACQUISITION ADDRESS N(BYTES)
S62
WAS THERE AN INSTRUCTION TO END SPECIAL REPRODUCTION?
S63
N
Y
SPECIAL REPRODUCTION END
S64
OBTAIN THE NUMBER OF READ BYTES FROM THE FIRST REFERENCE IMAGE SIZE
S65
SEARCH FOR THE APPLICABLE RANGE CORRESPONDING TO THE INFORMATION-ACQUISITION ADDRESS N
IS THE KEY-CHANGE FLAG 0?
S66
N
Y
S67a
OBTAIN THE NEXT APPLICABLE-RANGE INFORMATION
S68
DECODE
S69
ADD [GOP SIZE(NUMBER OF PACKET) X PACKET SIZE] TO N AND CHANGE THE INFORMATION -ACQUISITION ADDRESS
S70
CHANGE TO REFERENCE THE NEXT POINTER TABLE

FIG.15A

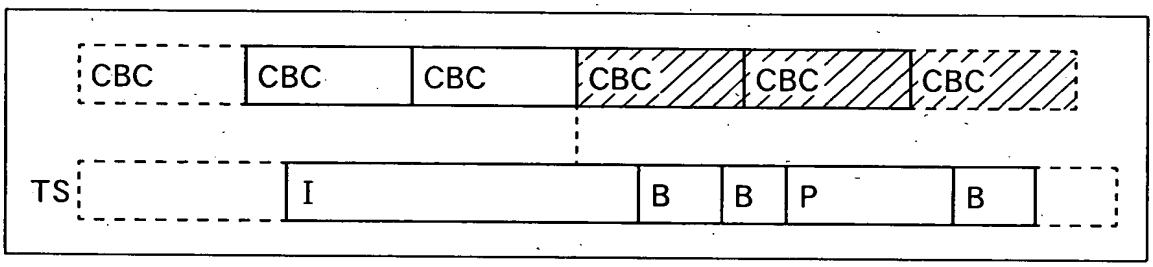

FIG.15B

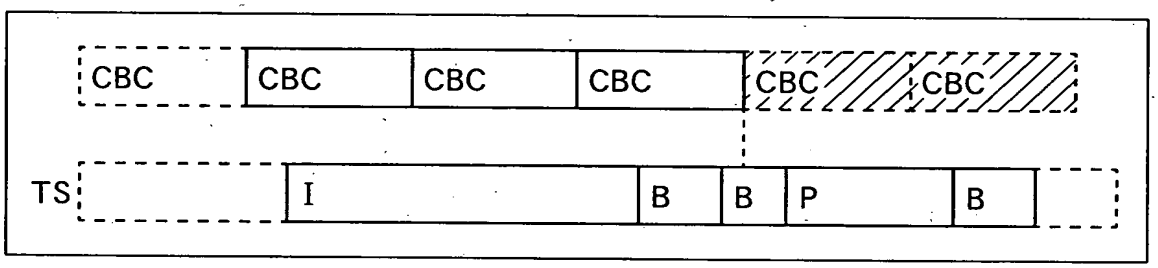

FIG.15C

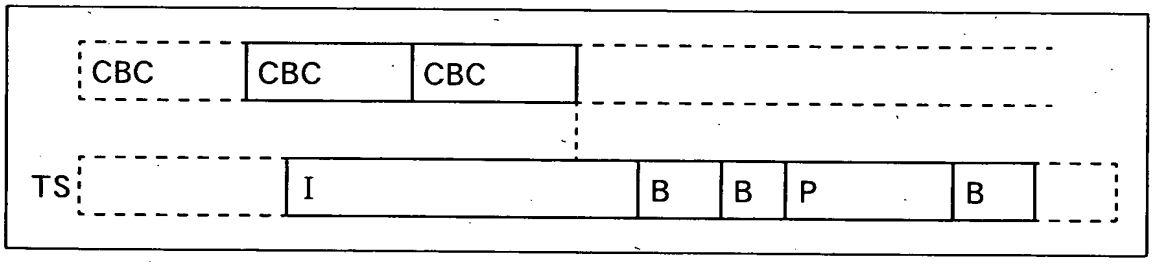
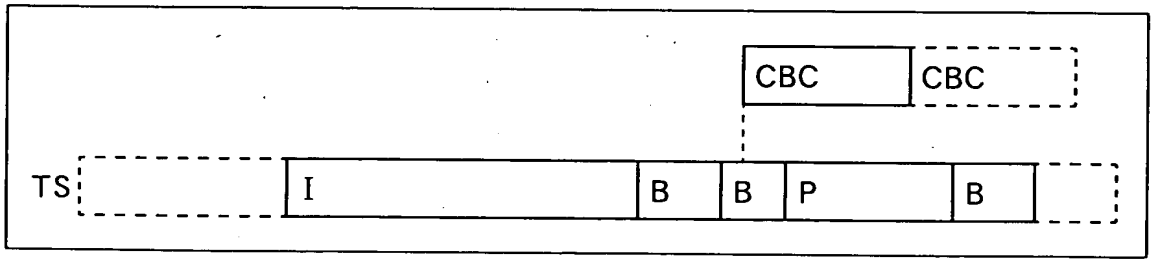
FIG.15D